IN THE UNITED STATES DISTRICT COURT
FOR THE WESTERN DISTRICT OF TEXAS
WACO DIVISION

MAXELL, LTD., *Plaintiff*	§	
-v-	§	**W-21-CV-00347-ADA**
AMPEREX TECHNOLOGY LIMITED, *Defendant*	§	

CLAIM CONSTRUCTION ORDER AND MEMORANDUM IN SUPPORT THEREOF

Before the Court are the Parties' claim construction briefs: Defendant Amperex Technology Limited's Opening and Reply briefs (ECF Nos. 51 and 54 respectively) and Plaintiff Maxell Limited's Response and Sur-Reply briefs (ECF Nos. 52 and 58, respectively). The Court provided preliminary constructions for the disputed terms one day before the hearing. The Court held the *Markman* hearing on February 14, 2022. ECF No. 69. During that hearing, the Court informed the Parties of the final constructions for the disputed terms. *Id.* This Order does not alter any of those constructions.

I. DESCRIPTION OF THE ASSERTED PATENTS

Plaintiff asserts U.S. Patent Nos. 8,691,446, 9,077,035, 9,166,251, and 9,350,019. The '446, '035, and '019 Patents are directed towards the chemical composition of a battery's positive electrode, while the '251 Patent is directed towards separating battery components using heat-resistant elements.

A. The ’446, ’035, and ’019 Patents

The ’446, ’035, and ’019 Patents are all entitled “Nonaqueous secondary battery and method of using the same.” The ’446 Patent is the parent of the ’019 Patent; the’035 Patent is unrelated to the ’446 and ’035 Patents, but appears to be directed to similar technology and shares many of the same claim terms. *See, e.g.*, ’446 Patent, Claim 1; ’035 Patent, Claim 1; ’019 Patent, Claim 1; *see also* Opening at 3–4.

Each of these patents describes a lithium-ion battery whose positive electrode includes at least two lithium-containing transition metal oxides with different average particle sizes. *See, e.g.*, ’446 Patent, Claim 1, Limitation [c] (“wherein the positive electrode contains, as an active material, at least two lithium containing transition metal oxides having different average particle sizes”); ’035 Patent, Claim 1, Limitation [b] (same); ’019 Patent, Claim 1, Limitation [b] (same). Using two lithium-containing transition metal oxides with different average particle sizes allows the battery manufacturer to increase the number of lithium-containing transition metal oxides in the same volume, which allows for a more compact battery, as well as greater energy efficiency.

B. The ’251 Patent

The ’251 Patent is entitled “battery separator and nonaqueous electrolyte battery.” The ’251 Patent purports to disclose a novel separator between the positive and negative portions of the lithium-ion battery. ’251 Patent at Abstract. More specifically, the ’251 Patent recites:

> In the nonaqueous electrolyte battery of the present invention, the heat generation starting temperature of the positive electrode is as high as 180° C. or higher. This can suppress heat to be generated from the positive electrode when the battery is placed in a high-temperature environment. Moreover, the nonaqueous electrolyte battery uses the battery separator that includes a thermoplastic resin and heat-

> resistant fine particles containing particles with a particle size of 0.2 μm or less in a proportion of 10 vol % or less and particles with a particle size of 2 μm or more in a proportion of 10 vol % or less, and that effects a shutdown in the range of 100° C. to 150° C. This can reliably prevent a short circuit due to contact between the positive electrode and the negative electrode at high temperatures.

Id. at 2:43–56.

II. LEGAL STANDARD

A. General principles

The general rule is that claim terms are generally given their plain-and-ordinary meaning. *Phillips v. AWH Corp.*, 415 F.3d 1303, 1312 (Fed. Cir. 2005) (*en banc*); *Azure Networks, LLC v. CSR PLC*, 771 F.3d 1336, 1347 (Fed. Cir. 2014), *vacated on other grounds*, 575 U.S. 959, 959 (2015) ("There is a heavy presumption that claim terms carry their accustomed meaning in the relevant com3333munity at the relevant time.") (internal quotation omitted). The plain-and-ordinary meaning of a term is the "meaning that the term would have to a person of ordinary skill in the art in question at the time of the invention." *Phillips*, 415 F.3d at 1313.

The "only two exceptions to [the] general rule" that claim terms are construed according to their plain-and-ordinary meaning are when the patentee (1) acts as his/her own lexicographer or (2) disavows the full scope of the claim term either in the specification or during prosecution. *Thorner v. Sony Computer Ent. Am. LLC*, 669 F.3d 1362, 1365 (Fed. Cir. 2012). The Federal Circuit has counseled that "[t]he standards for finding lexicography and disavowal are exacting." *Hill-Rom Servs., Inc. v. Stryker Corp.*, 755 F.3d 1367, 1371 (Fed. Cir. 2014). To act as his/her

own lexicographer, the patentee must "clearly set forth a definition of the disputed claim term" and "'clearly express an intent' to [define] the term." *Thorner,* 669 F.3d at 1365.

"Like the specification, the prosecution history provides evidence of how the PTO and the inventor understood the patent." *Phillips*, 415 F.3d at 1317. "[D]istinguishing the claimed invention over the prior art, an applicant is indicating what a claim does not cover." *Spectrum Int'l, Inc. v. Sterilite Corp.*, 164 F.3d 1372, 1379 (Fed. Cir. 1998). The doctrine of prosecution disclaimer precludes a patentee from recapturing a specific meaning that was previously disclaimed during prosecution. *Omega Eng'g, Inc. v. Raytek Corp.*, 334 F.3d 1314, 1323 (Fed. Cir. 2003). "[F]or prosecution disclaimer to attach, our precedent requires that the alleged disavowing actions or statements made during prosecution be both clear and unmistakable." *Id.* at 1325–26. Accordingly, when "an applicant's statements are amenable to multiple reasonable interpretations, they cannot be deemed clear and unmistakable." *3M Innovative Props. Co. v. Tredegar Corp.*, 725 F.3d 1315, 1326 (Fed. Cir. 2013).

A construction of "plain and ordinary meaning" may be inadequate when a term has more than one "ordinary" meaning or when reliance on a term's "ordinary" meaning does not resolve the parties' dispute. *O2 Micro Int'l Ltd. v. Beyond Innovation Tech. Co*., 521 F.3d 1351, 1361 (Fed. Cir. 2008). In that case, the Court must describe what the plain-and-ordinary meaning is. *Id.*

"Although the specification may aid the court in interpreting the meaning of disputed claim language . . ., particular embodiments and examples appearing in the specification will not generally be read into the claims." *Constant v. Advanced Micro-Devices, Inc.*, 848 F.2d 1560, 1571

(Fed. Cir. 1988). "[I]t is improper to read limitations from a preferred embodiment described in the specification—even if it is the only embodiment—into the claims absent a clear indication in the intrinsic record that the patentee intended the claims to be so limited." *Liebel-Flarsheim Co. v. Medrad, Inc.*, 358 F.3d 898, 913 (Fed. Cir. 2004).

An applicant's statements during the PCT prosecution may also indicate the scope of the invention. *See Caterpillar Tractor Co. v. Berco*, 714 F.2d 1110, 1116 (Fed. Cir. 1983) (stating that when instructions to foreign counsel or representations to foreign patent offices made by an applicant during prosecution of a corresponding foreign application provide "relevant evidence" with respect to claim interpretation, such information "must be considered."); *see also Gillette Co. v. Energizer Holdings, Inc.*, 405 F.3d 1367, 1374 (Fed. Cir. 2005) (finding that the applicant's own statements made before the European Patent office support the court's holding).

Although extrinsic evidence can be useful, it is "less significant than the intrinsic record in determining 'the legally operative meaning of claim language.'" *Phillips*, 415 F.3d at 1317 (quoting *C.R. Bard, Inc. v. United States Surgical Corp.*, 388 F.3d 858, 862 (Fed. Cir. 2004)). Technical dictionaries may be helpful, but they may also provide definitions that are too broad or not indicative of how the term is used in the patent. *Id.* at 1318. Expert testimony may also be helpful, but an expert's conclusory or unsupported assertions as to the meaning of a term are not. *Id.*

B. Indefiniteness

"[I]ndefiniteness is a question of law and in effect part of claim construction." *ePlus, Inc. v. Lawson Software, Inc.*, 700 F.3d 509, 517 (Fed. Cir. 2012). Patent claims must particularly point out and distinctly claim the subject matter regarded as the invention. 35 U.S.C. § 112, ¶ 2. A claim, when viewed in light of the intrinsic evidence, must "inform those skilled in the art about the scope of the invention with reasonable certainty." *Nautilus Inc. v. Biosig Instruments, Inc.*, 572 U.S. 898, 910 (2014). If it does not, the claim fails § 112, ¶ 2 and is therefore invalid as indefinite. *Id.* at 901. Whether a claim is indefinite is determined from the perspective of one of ordinary skill in the art as of the time the application was filed. *Id.* at 911.

III. LEGAL ANALYSIS

A. Term #1: "positive electrode mixture layer"

Term	Plaintiff's Proposed Construction	Defendant's Proposed Construction
"positive electrode mixture layer" U.S. Patent No. 8,691,446 Patent, Cls. 1, 3; U.S. Patent No. 9,350,019, Cl. 1; U.S. Patent No. 9,077,035, Cl. 1	No construction necessary; Plain and ordinary meaning	"A mixture of at least two lithium-containing transition metal oxides formed on one or both sides of an electrode current collector"

The parties dispute whether this term has a plain-and-ordinary meaning and what the proper construction should be.

1. Whether "positive electrode mixture layer" has a plain-and-ordinary meaning

The Parties' Positions:

With respect to this dispute, Defendant contends that this term does not have a plain-and-ordinary meaning to a POSITA. Opening at 7. Rather, at least according to Defendant, this term is specific to the '446, '019, and '035 Patents. *Id.*

In its response, Plaintiff contends that this term is "well-understood" in light of the intrinsic evidence. Response at 3 (citing ECF No. 52-1 (Lucht Declaration) at ¶ 17).

In its reply, Defendant's expert opines that this term does not have a plain-and-ordinary meaning to a POSITA. Reply at 2 (citing ECF No. 51-15 (Fuller Declaration) at ¶ 25). Defendant contends that Plaintiff and Plaintiff's expert "cite no evidence whatsoever showing use of this term in the relevant literature because that term is not a term of art in the industry." *Id.* Defendant contends that "[w]hile both experts understand what the phrase 'positive electrode layer' means, [Defendant's expert] states—and [Plaintiff's expert] does not deny—that the added word 'mixture' is uncommon and thus needs an explanation informed by the specification." *Id.* Defendant contends that "[f]aced with competing experts, the Court cannot conclude without more that the disputed claims can be given their plain and ordinary meaning." *Id.* (citing *Eon Corp. IP Holdings LLC*, 815 F.3d 1314, 1319 (Fed. Cir. 2016)).

In its sur-reply, Plaintiff contends that a POSITA would understand the meaning of both "positive electrode layer" and "mixture" so a POSITA would understand the combination of the two. Sur-Reply at 2 (citing Sur-Reply, Ex. 19 (Fuller Deposition) at 36:15–19).

The Court's Analysis:

After reviewing the parties' arguments and considering the applicable law, the Court agrees with Plaintiff and that the term "positive electrode mixture layer" has a plain-and-ordinary meaning for the reasons that follow. ***First***, the claims describe that the "positive electrode" comprises a "positive electrode mixture layer" and that the "positive electrode" comprises a mixture of "at least two lithium containing transition metal oxides having different average particle sizes." *See, e.g.*, '446 Patent, Claim 1, Lims. [a], [b]. ***Second***, descriptions in the specification confirm that the term is simply the sum of its constituent words, *i.e.*, a mixture layer for the positive electrode. *See, e.g.*, '446 Patent at 2:53–62.

2. Dispute what the proper construction should be

The Parties' Positions:

Defendant contends that the specification makes it clear that "two lithium-containing transition metal oxides are blended together in a particular weight ratio and applied to the current collector for the positive electrode[.]" Opening at 8 (citing/quoting '446 Patent at 16:62–17:1, '019 Patent at 16:54–17:9, '035 Patent at 11:65–12:3). Defendant also contends that the specification describes that this mixture is "essential." *Id.* (citing '446 Patent at 17:45–47, '019 Patent at 17:53–55, '035 Patent at 13:20–22). Defendant contends that the "mixture must include at least two different lithium-containing transition metal oxides." *Id.* (quoting'446 Patent at 9:51–62, '019 Patent at 9:59–10:3, '035 Patent at 4:66-5:1–10).

Defendant contends that the specification makes it clear that the mixture layer is "formed on" the surfaces of the electrode collector. *Id.* (citing'446 Patent at 7:53–57, '019 Patent at 7:61–65). Defendant contends that the specification also makes it clear that the mixture is "uniformly applied to both surfaces" of the collector. *Id.* (citing '035 Patent at 22:9–13). Finally, Defendant contends that the specifications provide examples of the "present invention," where each example describes that the "positive electrode mixture layer" includes "two or more transition metal oxides blended together and applied to both surfaces of the electrode collector." *Id.* at 8–9 (citing '446 Patent at 22:30–27:23, '019 Patent at 22:39–27:29, '035 Patent at 21:34–26:49).

In its response, Plaintiff contends that Defendant's proposed construction excludes known, necessary components from the electrode layer. Response at 3. More specifically, Plaintiff contends that Defendant's proposed construction "improperly omits the presence of additional materials (*e.g.*, a binder or an electric conductive aid) likely to be present in the positive electrode mixture layer." *Id.* Plaintiff contends that a POSITA would understand that a binder is often a necessary part of the layer. *Id.* at 4 (citing ECF No. 52-1 (Lucht Declaration) at ¶¶ 35–37). Plaintiff contends that the specification discloses the presence of the binder in the positive electrode mixture layer. *Id.* at 3–4 (quoting/citing '446 Patent at 16:47–16:57, 17:14–19; '019 Patent at 16:55–17:12, 17:22-24; '035 Patent at 11:66-12:18, 12:56-58).

Plaintiff next contends that Defendant's proposed construction improperly attempts to add an unsupported process limitation. *Id.* at 4. More specifically, Plaintiff contends that the specifications of the '446, '035, and '019 Patents "do not require that the positive electrode active material be applied to the electrode current collector using any particular deposition method (*e.g.*,

'formed on')." *Id.* Plaintiff contends that it is inappropriate to add a process limitation to an apparatus claim, unless the "process is an essential feature of the apparatus." *Id.* (citing *Medtronic Vascular Inc. v. Bos. Sci. Corp.*, 526 F. Supp. 2d 613, 622–23 (E.D. Tex. 2007)). Plaintiff contends that "formed on" is not essential. *Id.* (citing ECF No. 52-1 (Lucht Declaration) at ¶ 38, '446 Patent at 17:2–4 ("the method for producing the positive electrode is not limited . . . and may be any other method.")).

In its reply, with respect to Plaintiff's argument that Defendant's proposed construction excludes a binder or an electric conductive aid, Defendant contends that the "at least" language in its proposed construction does not exclude anything, but rather only specifies what is needed. Reply at 2. With respect to whether Defendant's proposed construction improperly adds a process limitation, Defendant contends that "'mixture layer' already includes an embedded process," as every embodiment in in the patents begins with mixing metals together. *Id.* at 2–3.

In its sur-reply, with respect to Plaintiff's argument that Defendant's proposed construction excludes a binder or an electric conductive aid, Plaintiff contends that "at least" modifies "two" which limits the mixture to lithium-containing transition metal oxides and nothing else. Sur-Reply at 3. With respect to whether Defendant's proposed construction improperly adds a process limitation, Plaintiff contends that "formed on" improperly imports a limitation from the specification.

The Court's Analysis:

After reviewing the parties' arguments and considering the applicable law, the Court agrees with Plaintiff and finds that the proper construction is plain-and-ordinary meaning for the reasons that follow. ***First***, the "heavy presumption" is that terms should be construed according to their plain-and-ordinary meaning. *Azure Networks*, 771 F.3d at 1347. ***Second***, Defendant does not expressly allege lexicography or disclaimer, which are the only two exceptions to the general rule that a term should be construed as having its plain-and-ordinary meaning. *Thorner*, 669 F.3d at 1365.

Third, part of Defendant's proposed construction renders some claim language to be superfluous. For example, Claim 1, Limitation [b] of the '446 Patent provides "wherein the positive electrode contains, as an active material, at least two lithium containing transition metal oxides having different average particle sizes[.]" *See also* '019 Patent, Claim 1, Limitation [b] (same); '035 Patent, Claim 1, Limitation [b] (same). As such, Defendant's proposed construction use of the phrase "mixture of at least two lithium-containing transmission metal oxides" renders most of those limitations to be superfluous. *Generation II Orthotics Inc. v. Med. Tech. Inc.*, 263 F.3d 1356, 1365 (Fed. Cir. 2001) (a construction should not "revise or ignore the explicit language of the claims.").

Fourth, the Court finds that Defendant's proposed construction use of the phrase "formed on" improperly imports a limitation from the specification. *Phillips*, 415 F.3d at 1320 ("One of the cardinal sins of patent law [is] reading a limitation from the written description into the

claims.") (quoting *SciMed Life Sys., Inc. v. Advanced Cardiovascular Sys., Inc.*, 242 F.3d 1337, 1340 (Fed. Cir. 2001).

Fifth, the Court disagrees with Defendant that the "present invention" language in the specification limits the scope of this claim term. Defendant cites '446 Patent at 22:30–27:23, '019 Patent at 22:39–27:29, '035 Patent at 21:34–26:49 in support of its argument that the specifications describe the "present invention" using examples and that those examples describe that the "positive electrode mixture layer" includes "two or more transition metal oxides blended together and applied to both surfaces of the electrode collector." Opening at 8–9. But the specifications of all three patents expressly describe that "the Examples do not limit the present invention." '446 Patent at 22:33–34, '019 Patent at 22:42–43, '035 Patent at 21:37–38. Given that the specifications expressly recite that the present invention is not limited to the disclosed examples and Defendant has not provided a reason why the Court should ignore that express language and/or why the present invention **is** limited to those examples, the Court declines to limit the "positive electrode mixture layer" to require "two or more transition metal oxides blended together and applied to both surfaces of the electrode collector." *Rambus, Inc. v. Infineon Techs. AG*, 318 F.3d 1081, 1094–95 (Fed. Cir. 2003) (although portions of the written description referred to the term at issue as limiting the claimed invention to a preferred embodiment, "the remainder of the specification and the prosecution history shows that Rambus did not clearly disclaim or disavow such claim scope in this case.").

On the other hand, the Court disagrees with Plaintiff that the "at least two lithium-containing transition metal oxides" excludes other structures, *e.g.*, a binder or an electric

conductive aid. Rather, that language appears only to specify the minimum number of lithium-containing transition metal oxides that the claimed invention requires.

Therefore, for the reasons described above, the Court's final construction for "positive electrode mixture layer" is plain-and-ordinary meaning.

B. Term #2: "the positive electrode contains, as [an] active material[s], at least two lithium-containing transition metal oxides having different average particle sizes"

Term	Plaintiff's Proposed Construction	Defendant's Proposed Construction
"the positive electrode contains, as [an] active material[s], at least two lithium-containing transition metal oxides having different average particle sizes" U.S. Patent No. 8,691,446 Patent, Cls. 1, 3; U.S. Patent No. 9,350,019, Cl. 1; U.S. Patent No. 9,077,035, Cl. 1	No construction necessary; Plain and ordinary meaning	"The active material of the positive electrode is a mixture formed from two or more lithium-containing transition metal oxides, at least two of the transition metal oxides having different average particle sizes"

The Parties' Positions:

Defendant contends that its proposed construction is the plain-and-ordinary meaning. Opening at 9. Defendant contends that the specification only describes forming the positive electrode in one way with "at least two lithium-containing transition metals with different average particle sizes." *Id.* at 10 (quoting/citing '446 Patent at 16:46–66, '019 Patent at 16:54–17:7, '035 Patent at 11:65-12:15). Defendant contends that the specification describes "formation of the positive electrode by a specific mixture as 'essential.'" *Id.* at 11 (quoting/citing '446 Patent at

17:45–47, '019 Patent at 17:53–55, '035 Patent at 13:20–23; *Sunrace Roots Enter. Co., Ltd. v. SRAM Corp.*, 336 F.3d 1298, 1305 (Fed. Cir. 2003)).

In its response, Plaintiff contends that Defendant's proposed construction improperly limits the "only" active material to a mixture of two or more lithium-containing transition metal oxides. Response at 5. Plaintiff contends that, by contrast, a POSITA would understand that there can be other active materials. *Id*. at 5–6.

Plaintiff also contends that Defendant is attempting—as it did for Term #1—to read a process limitation into the claims. *Id.* at 6. But Plaintiff contends that the only time that this is permissible is when the specification describes that that process as "essential." *Id.* Plaintiff contends that the specification focuses on the composition of the positive electrode, and not a process of creating it. *Id.*

In its reply, with respect to Plaintiff's argument that Defendant's proposed construction limits what the "active material" may be, Defendant contends that the "at least" language in its proposed construction does not exclude anything, but rather only specifies what is needed. Reply at 3. With respect to the "formed on" language in its proposed construction, Defendant contends that "[b]ecause the patents each describe the formation of the positive electrode by a specific mixture as 'essential,' the construction should be limited to what 'was described as essential to the invention.'" *Id.* at 4 (citing '446 Patent at 17:45-47, '019 Patent at 17:53-55, '035 Patent at 13:20-23; *Sunrace*, 336 F.3d at 1305).

In its sur-reply, Plaintiff repeats its contention that Defendant's proposed construction improperly limits the "only" active material to a mixture of two or more lithium-containing

transition metal oxides. Sur-Reply at 4. Plaintiff contends that Defendant "does not explain in its reply brief how its proposed construction could include materials other than lithium-containing transition metal oxides." *Id*.

Plaintiff also repeats its contention that Defendant is improperly attempting to read a process limitation into the claims. *Id.* at 4. Plaintiff contends even Defendant's expert admits that "formed on" does not appear in the claims. *Id.* (quoting Sur-Reply, Ex. 19 (Fuller Deposition) at 59:16–19).

The Court's Analysis:

After reviewing the parties' arguments and considering the applicable law, the Court agrees with Plaintiff and finds that the proper construction is plain-and-ordinary meaning for the reasons that follow. ***First***, the "heavy presumption" is that terms should be construed according to their plain-and-ordinary meaning. *Azure Networks*, 771 F.3d at 1347. ***Second***, Defendant does not expressly allege lexicography or disclaimer, which are the only two exceptions to the general rule that a term should be construed as having its plain-and-ordinary meaning. *Thorner*, 669 F.3d at 1365.

Third, the Court finds that Defendant's proposed construction use of the phrase "formed on" improperly imports a limitation from the specification. *Phillips*, 415 F.3d at 1320 ("One of the cardinal sins of patent law [is] reading a limitation from the written description into the claims.") (quoting *SciMed Life*, 242 F.3d at 1340).

Fourth, the Court disagrees with Defendant that the specification describes "formation of the positive electrode by a specific mixture as 'essential.'" Response at 11. The passages that Defendant cites in support of that conclusion recites that "[i]t is essential for the nonaqueous secondary battery of the present invention to have the nonaqueous electrolyte and the positive electrode, which are explained above, and thus there is no specific limitation on other elements or structure of the battery." '446 Patent at 17:45–47, '019 Patent at 17:53–55, '035 Patent at 13:20–23. This passage only generally describes that it is "essential" that the "nonaqueous secondary battery of the present invention to have the nonaqueous electrolyte and the positive electrode." It does not, however, specifically describe that the formation of the positive electrode by a specific mixture as "essential."

Fifth, apart from the "formed from" wording, Defendant's proposed construction appears to otherwise simply paraphrase the claim language, which the Court declines to do. *C.R. Bard, Inc. v. United States Surgical Corp.*, 388 F.3d 858, 863 (Fed. Cir. 2004) (agreeing that "merely rephrasing or paraphrasing the plain language of a claim by substituting synonyms does not represent genuine claim construction") (internal quotations omitted).

On the other hand, the Court disagrees with Plaintiff that the "at least two lithium-containing transition metal oxides" excludes other structures, *e.g.*, a binder or an electric conductive aid. Rather, that language appears only to specify the minimum number of lithium-containing transition metal oxides that the claimed invention requires.

Therefore, for the reasons described above, the Court's final construction for this term is plain-and-ordinary meaning.

C. Term #3: "different compositions of elements" / "is different from"

Term	Plaintiff's Proposed Construction	Defendant's Proposed Construction
"different compositions of elements" / "is different from" U.S. Patent No. 8,691,446 Patent, Cls. 1, 2, 3 U.S. Patent No. 9,350,019, Cls. 3, 4	No construction necessary; Plain and ordinary meaning	"The first and second lithium-containing transition metal oxides do not share all of the same chemical elements"

The Parties' Positions:

The dispute between the parties is whether the elements need to be different or whether the elements can be the same (or different) but have different molecular proportions.

Defendant contends that the specifications describe that a "different composition" of elements have different elements. Opening at 13 (citing '446 Patent at 15:7–17, '019 Patent at 15:15–25; *see also* '446 Patent at 27:11–23, '019 Patent at 27:16–29). On the other hand, Defendants contend that while the specifications disclose molecules with the same elements, but different proportions, are not "different compositions of elements," but are rather the "same composition of elements." *Id.* at 14. Defendant contends that Examples 9 and 12 "illustrate" different composition of elements, namely that "[E]xample 9 depicts metal oxide A as containing LiCo and metal oxide B as containing LiCu, while Example 12 depicts metal oxide A as containing LiCu versus metal oxide B containing LiCo plus Ni and Mn." *Id.* (citing '446 Patent at 26:30–44, 27:11–23; '019 Patent at 26:37–51, 27:16–29). Defendant contends that Examples 1–8 and 10-11, on the other hand, all describe metal oxides containing the same composition of elements, but

with varying molar amounts. *Id.* Defendant contends that these examples are unclaimed, and thus dedicated to the public. *Id.* at 15.

Defendant contends that during prosecution, Examiner rejected the claims in view of the Kikuchi prior art reference which disclosed "multiple lithium transition metal oxide compounds with different particular sizes." *Id*. at 14 (citing Opening, Ex. 7 at 2–3, 15). Defendant contends that Applicant amended the claims to add "different compositions." *Id.* at 14–15 (citing Opening, Ex. 8 at 2, 4, 5, 6). Defendant contends that Applicant argued that, unlike the claimed invention, Kikuchi disclosed the "same composition of elements." *Id.* at 15 (citing Opening, Ex. 8 at 13). Defendant contends that the claims of the '446 and '019 Patents were only allowed over Kikuchi because the claims were amended to claim two chemically different lithium-containing transition metal oxides. *Id.*

In its response, Plaintiff contends that the terms do not require construction as their meaning is "ascertainable in light of the intrinsic evidence." Response at 6. Plaintiff contends that the term "clearly encompasses two scenarios: (1) the first and second lithium- containing transition metal oxides do not share all of the same chemical elements; and (2) the first and second lithium-containing transition metal oxides contain all of the same chemical elements, but in different proportions." *Id.* at 6–7.

Plaintiff also contend that certain claims require "different" compositions while using the same variables for specific elements, *e.g.*, $Li_aM^1_bM^2_cM^3_dO_2$ and $Li_xM^1_yM^2_zM^3_vO_2$, where $M^{\#}$ are the different elements. Response at 7 (citing '446 Patent, Claims 1–3, '019 Patent, Claims 3–4). Plaintiff contends that because the elements $M^{\#}$ are the same between the two compositions, a

POSITA would understand that the "two formulas could differ either in the selection of elements for M^1, M^2, and M^3, or in the selection of the elemental ratios." *Id.* Based on that, Plaintiff contends Defendant's proposed construction (which excludes compositions that use the same elements) is contrary to the claim language. *Id.*

Plaintiff contends that Defendant's proposed construction is also contrary to the specification. *Id.* In particular, Plaintiff contends that the specification recites "M^1, M^2, and M^3 are selected from the same elements as in the formula (1), **but the elements selected or the constituting element ratios selected** in the individual positive electrode active materials having different average particle sizes **may differ from each other**." *Id.* at 7–8 (quoting '446 Patent at 11:21–25 (emphasis in Plaintiff's brief)).

Plaintiff further contends that Defendant's proposed construction departs from the basic principles of chemistry. *Id.* at 8. Basic chemistry dictates that different ratios results in different compounds, *e.g.*, H_2O versus H_2O_2. *Id.*

Plaintiff contends that Defendants ignore numerous disclosures in the specification in order to limit the claim to a single embodiment. *Id.* Plaintiff contends that only one of the examples provided in the '446, '019, and '035 Patents "describes an embodiment where the two transition lithium-containing transition metal oxides contain different chemical elements. All but one[] of the remaining examples disclose lithium-containing transition metal oxides that contain all of the same chemical elements in different proportions[.]" *Id.* at 9–10. Plaintiff contends that Defendant's proposed construction improperly excludes all of these examples. *Id.* at 10.

With respect to Defendant's prosecution history argument, Plaintiff contends that the alleged disclaimer is not "clear and unambiguous." *Id.* Plaintiff then contends that Defendant is also wrong about the prosecution history. *Id.* More specifically, Plaintiff contends that during prosecution, Applicant distinguished the amended claim by arguing:

> Kikuchi JP '582 describes the primary and secondary particles, but these particles are made of the same material and should have the same composition of elements, Kikuchi JP '582 does not describe nor teach the use of lithium-containing transition metal oxides having different average particle sizes which have different compositions of elements between them.

Id. (citing Opening, Ex. 8 at 13.). Plaintiff contend that Kikuchi describes an invention where the large and small particles are made from the same composition of elements, *i.e.*, contain identical elements and identical subscripts for each element. *Id.* at 11–12.

In its reply, Defendant contends that Plaintiff invites the Court to construe "different" as "the same." Reply at 4. Defendant contends that if the inventor intended that "different compositions of elements" meant "the same elements but in different proportions," the inventor would have drafted the claims accordingly. *Id.* Defendant again contends that the claims do not need to cover all examples. *Id.*

Defendant contends that during prosecution, Applicant "overcame this rejection by calling for an anode with at least two different lithium-containing transition metal oxides 'having different average particle sizes' and 'different compositions of elements between them.'" *Id.* (quoting Opening, Ex. 8 at 2, 4, 5, 6). Defendant contends that Applicant contrasted Kikuchi, as having the "same material and should have the same composition of elements." *Id.* (quoting Opening, Ex. 8

at 2, 4, 5, 6). Based on those statements, Defendant contends that Plaintiff cannot recapture claim scope it gave up during prosecution. *Id.*

In its sur-reply, Plaintiff again contends that the specification recites "M^1, M^2, and M^3 are selected from the same elements as in the formula (1), **but the elements selected or the constituting element ratios selected** in the individual positive electrode active materials having different average particle sizes **may differ from each other**." Sur-Reply at 5 (quoting '446 Patent at 11:21–25). Plaintiff also contends that Defendant's expert admits that "composition" refers to the ratio of elements in a formula. *Id.* (Sur-Reply, Ex. 19 at 64:1–4). Plaintiff contends that Defendant and its expert essentially argue that "compounds with different ratios of elements are the same compound." *Id.* at 6.

Plaintiff contends that Applicant argued that the Kikuchi reference described "primary and secondary particles, but these particles are **made of the same material and should have the same composition of elements**, Kikuchi JP '582 does not describe nor teach the use of lithium-containing transition metal oxides having different average particle sizes **which have different compositions of elements between them**." *Id.* (citing Opening, Ex. 8 at 13) (emphasis in Plaintiff's brief).

The Court's Analysis:

After reviewing the parties' arguments and considering the applicable law, the Court agrees with Plaintiff and finds that the proper construction is plain-and-ordinary meaning for the reasons that follow. ***First***, the "heavy presumption" is that terms should be construed according to their

plain-and-ordinary meaning. *Azure Networks*, 771 F.3d at 1347. ***Second***, Defendant does not expressly allege lexicography or disclaimer, which are the only two exceptions to the general rule that a term should be construed as having its plain-and-ordinary meaning. *Thorner*, 669 F.3d at 1365.

Third, the claims describe that a "different composition" includes two compounds that use the same elements, but with different molar amounts. For example, Claim 1, Limitation [b] of the '446 Patent recites that the claim requires two lithium-containing transition metal oxides with "different compositions of elements." Claim 1, Limitation [c] describes that the lithium-containing transition metal oxide with the smaller particle size is governed by formula (1), which is $Li_xM^1{}_yM^2{}_zM^3{}_vO_2$. Dependent Claim 2 of the '446 Patent recites that the lithium-containing transition metal oxide with the larger particle size is governed by formula (2), which is $Li_aM^1{}_bM^2{}_cM^3{}_dO_2$. Claims 1 and 2 both recite that "M^1 represents at least one transition metal element selected from Co, Ni and Mn." '446 Patent, Claim 1, Limitation [d]; Claim 2, Limitation [b]. Claim 1 recites that "M^2 represents Mg and at least one metal element selected from the group consisting of Ti, Zr, Ge, Nb, Al and Sn," while Claim 2 recites that "M^2 represents at least one metal element selected from the group consisting of Mg, Ti, Zr, Ge, Nb, Al and Sn. *Id.*, Claim 1, Limitation [d]; Claim 2, Limitation [b]. Claims 1 and 2 both recite that "M^3 represents an element other than Li." *Id.*, Claim 1, Limitation [d]; Claim 2, Limitation [b]. In other words, Claims 1 and 2 recite the same requirements for M^1 and M^3, and the requirements for M^2 could be the same as well. Therefore, Claims 1 and 2 of the '446 Patent describes that two compounds that could use the same

elements—only in different molar amounts—are "different compositions." In the same manner, Claims 1 to 4 of the '019 Patent also describe the same relationship.

Fourth, the specifications describe that a "different composition" includes two compounds that use the same elements, but with different molar amounts. For example, the '446 Patent specification recites "M^1, M^2, and M^3 are selected from the same elements as in the formula (1), **but the elements selected or the constituting element ratios selected** in the individual positive electrode active materials having different average particle sizes **may differ from each other**." '446 Patent at 11:21–25 (emphasis added). In other words, this passage describes that "different compositions" could cover different "constituting element ratios," while the selected elements could be the same.

Fifth, the Court agrees with Plaintiff that basic chemistry dictates that different ratios results in different compounds, *e.g.*, H_2O versus H_2O_2, which may have very different properties.

Sixth, the Court agrees with Plaintiff that Defendant's proposed construction excludes disclosed embodiments, *e.g.*, Examples 1–8 and 10–11. *Oatey Co. v. IPS Corp.*, 514 F.3d 1271, 1276 (Fed. Cir. 2008) ("We normally do not interpret claim terms in a way that excludes embodiments disclosed in the specification. . . . where claims can reasonably be interpreted to include a specific embodiment, it is incorrect to construe the claims to exclude that embodiment, absent probative evidence to the contrary."). Defendant does not appear to provide probative evidence to the contrary, but rather asserts—without evidence or support—that the patentee intended to dedicate these examples to the public. Because unsupported attorney argument does

not rise to the level of probative evidence, the Court finds that Defendant's proposed construction improperly excludes disclosed embodiments.

Seventh, the Court agrees with Plaintiff that Defendant's proposed construction improperly limits the scope of the claim term to specific disclosed embodiments, *e.g.*, Examples 9 and 12. *Liebel-Flarsheim*, 358 F.3d at 913 ("[I]t is improper to read limitations from a preferred embodiment described in the specification—even if it is the only embodiment—into the claims absent a clear indication in the intrinsic record that the patentee intended the claims to be so limited.").

Eighth, the Court agrees with Plaintiff that Applicant's prosecution statements are not "clear and unmistakable." *Id.* at 900. By contrast, the Court finds that Applicant argued that the Kikuchi reference describes a single composition ("same material" and the "same composition of elements") while the claimed invention discloses having "different compositions," *i.e.*, different material (elements) or different composition of elements. Opening, Ex. 8 at 13. At minimum, this statement equally supports that the (1) the first and second lithium- containing transition metal oxides do not share all of the same chemical elements; and (2) the first and second lithium-containing transition metal oxides contain all of the same chemical elements, but in different proportions, which indicates there is no disclaimer. *3M Innovative Props. Co. v. Tredegar Corp.*, 725 F.3d 1315, 1326 (Fed. Cir. 2013) (when "an applicant's statements are amenable to multiple reasonable interpretations, they cannot be deemed clear and unmistakable.").

Therefore, for the reasons described above, the Court's final construction for these terms is plain-and-ordinary meaning.

D. Term #4: "a compound having at least two nitrile groups"

Term	Plaintiff's Proposed Construction	Defendant's Proposed Construction
"a compound having at least two nitrile groups" U.S. Patent No. 8,691,446 Patent, Cls. 1, 3; U.S. Patent No. 9,350,019, Cls. 1	No construction necessary; Plain and ordinary meaning	"A compound with at least two nitrile groups that are 1% or less by total weight of the electrolyte"

The Parties' Positions:

Defendant contends that the only thing the patent says about nitrile compounds is that the range is not "arbitrary," but rather the only embodiment discloses that the range is 1% or less in weight of the electrolyte solution. Opening at 16 ('446 Patent at 5:8-20, '019 Patent at 5:17-29). The reason for this, at least according to Defendant, is that the charge-discharge cycle characteristics of the battery will be degraded when the amount of the nitrile compound is too large. *Id.*

In its response, Plaintiff contends that there are two "fatal" flaws with Defendant's proposed construction. First, Plaintiff contends that Defendants' proposed construction eliminates the requirement of "two nitrile groups." Response at 12–13. Second, Plaintiff contends that it also "imports embodiments." *Id.* at 13. More specifically, Plaintiff contends that Defendant's proposed construction is based on the only disclosed embodiment, but that "it is improper to read limitations from a preferred embodiment described in the specification—even if it is the only embodiment—into the claims absent a clear indication in the intrinsic record that the patentee intended the claims to be so limited." *Id.* (quoting *Dealertrack, Inc. v. Huber*, 674 F.3d 1315, 1327 (Fed. Cir. 2012)).

In its reply, with respect to Plaintiff's second point, Defendant contends that the objective of the present invention is to provide a battery with "good charge-discharge characteristics" and that 1% or less nitrile compound is necessary to achieve that. Reply at 6. Defendant contends that "[b]ecause the patent expressly teaches away from higher concentrations of nitrile groups as 'an object of the present invention,'" the Court should adopt Defendant's proposed construction. *Id.*

In its sur-reply, Plaintiff contends that Defendant's proposed construction "drastically departs from the plain meaning of the term by incorrectly omitting the required presence of two nitrile groups and importing a numerical limitation[.]" Sur-Reply at 7. With respect to the first "fatal" flaw, Plaintiff contends that Defendant and its expert take opposite positions on whether Defendant's proposed construction requires two nitrile groups. *Id.*

With respect to the second "fatal" flaw, Plaintiff again contends that Defendant's proposed construction improperly imports an embodiment. *Id.* at 7–8.

The Court's Analysis:

After reviewing the parties' arguments and considering the applicable law, the Court agrees with Plaintiff and finds that the proper construction is plain-and-ordinary meaning for the reasons that follow. ***First***, the "heavy presumption" is that terms should be construed according to their plain-and-ordinary meaning. *Azure Networks*, 771 F.3d at 1347.

Second, Defendant does not expressly allege lexicography, which is one exception to the general rule that a term should be construed as having its plain-and-ordinary meaning. *Thorner*, 669 F.3d at 1365.

Third, the Court disagrees with Defendant that the "present invention" language constitutes a disclaimer. The "present invention" passages that Defendant cite do not restrict the nitrile weight to a particular range. '446 Patent at 3:11–14 ("the nonaqueous electrolyte used in the nonaqueous secondary battery of the present invention contains a compound having at least two nitrile groups in the molecule."), '019 Patent at 3:21–23[1] (same); '446 Patent at 2:49-52 ("An object of the present invention is to provide a nonaqueous secondary battery having a high capacity, good charge discharge cycle characteristics and high storage characteristics."). The first passage describes that the "nonaqueous electrolyte used in the nonaqueous secondary battery … contains a compound having at least two nitrile groups in the molecule," but does not further limit the nitrile weight. The second passage does not even mention the nitrile groups, let alone limit the nitrile weight. As such, the Court concludes that these passages, individually or collectively, do not limit the nitrile weight in the manner required by Defendant's proposed construction and that the "present invention" language does not function as a disclaimer.

Fourth, the Court agrees with Plaintiff that Defendant's proposed construction improperly limits the scope of the claim term to the disclosed embodiment. *Liebel-Flarsheim*, 358 F.3d at 913 ("[I]t is improper to read limitations from a preferred embodiment described in the specification—even if it is the only embodiment—into the claims absent a clear indication in the intrinsic record that the patentee intended the claims to be so limited.").

[1] Defendant cites to '019 Patent at 3:24–35, but that passage does not use the phrase "present invention."

Therefore, for the reasons described above, the Court's final construction for these terms is plain-and-ordinary meaning.

E. Term #5: "0.97 ≤x<1.02, 0.8≤y<1.02, 0.002≤z≤0.05, and 0≤v≤0.05" / "0.97≤a<1.02, 0.8≤b<1.02, 0≤c≤0.02, and 0≤d≤0.02"

Term	Plaintiff's Proposed Construction	Defendant's Proposed Construction
"0.97 ≤x<1.02, 0.8≤y<1.02, 0.002≤z≤0.05, and 0≤v≤0.05" / "0.97≤a<1.02, 0.8≤b<1.02, 0≤c≤0.02, and 0≤d≤0.02" U.S. Patent No. 8,691,446 Patent, Cls. 1, 2, 3, 4; U.S. Patent No. 9,350,019, Cls. 1, 2; U.S. Patent No. 9,077,035, Cl. 1	No construction necessary; Plain and ordinary meaning	Indefinite

The Parties' Positions:

Defendant contends there are two bases for indefiniteness: 1) Different numbers of significant figures at the range endpoints for specific variables and 2) M^2 and M^3 are described as being both optional and required. The formulas at issue are:

- $Li_xM^1_yM^2_zM^3_vO_2$ (1)
- $Li_aM^1_bM^2_cM^3_dO_2$ (2)

and the variable ranges are:

- 0.97 ≤x<1.02
- 0.8≤y<1.02,
- 0.002≤z≤0.05
- 0≤v≤0.05
- 0.97≤a<1.02
- 0.8≤b<1.02
- 0≤c≤0.02
- 0≤d≤0.02

Different numbers of significant figures at the range endpoints: Defendant contends that the ranges of y and b ($0.8 \leq \{y, b\} < 1.02$) have 1 significant figure on the low end and 3 on the high end. Opening at 19. Defendant contends that a small change in the number at the low end (*e.g.*, 0.75 versus 0.84, both of which round to 0.8) can make a huge difference, a POSITA would not understand what the range values are. *Id.* Defendant contends that the "absence of a clear range set forth with mathematical precision does not provide the POSITA with 'clear notice of what is claimed[.]'" *Id.* at 20 (quoting *Nautilus*, 572 U.S. at 899; citing *Astrazeneca AB v. Mylan Pharma. Inc.*, 2021 WL 5816742, at *3 (Fed. Cir. Dec. 8, 2021) (emphasizing importance of mathematical precision, and construing percentages to five decimals)). Defendant contends that similar problems exist for z, c, v, and d. *Id.* at 19–20.

In its response, Plaintiff contends that a POSITA would understand the ranges. Response at 15. Plaintiff also contends that more significant figures are needed when the number is smaller. *Id.* Plaintiff contends that *AstraZeneca* does not support Defendant's argument because in that case, the Court reported that certain significant figures are amenable to construction. Response at 15 (citing *AstraZeneca*, 19 F.4th at 1335).

Plaintiff contends that "[t]o the extent [Defendant] and its expert contest the precision of the claimed ranges, this is not a question of indefiniteness, but one of construction." *Id.* at 16. Plaintiff contends that because "a POSITA would have no difficulty applying standard scientific convention to the claimed ranges[,]" under *Nautilus*, the ranges are defined with sufficiently reasonable certainty to apprise a POSITA of the scope of the claims. *Id.*

In its reply, Defendant first contends that Plaintiff's plain-and-ordinary construction is "wrong because it necessarily requires this Court to rewrite the claim to insert a word of approximation, such as 'about' or 'approximately,' where no such word exist." Reply at 7. Defendant contends that Plaintiff's expert's comments that "rounding" is "often" used actually supports indefiniteness as there are "conflicting interpretations" when rounding should be used. *Id*. (citing *UUSI, LLC v. United States*, 131 Fed. Cl. 244, 266 (2017)).

Defendant contends that the asymmetry in the precision the upper and lower ends of the range "injects ambiguity into the claim because a POSITA cannot determine the scope of the claims. For example, within the M^2 range in formula 1, a POSITA does not know whether the upper value for M^2 can be .054444 (out to a thousand places) followed by a 9." *Id.* at 8.

Defendant further contends that the "asymmetry of the formulas renders the claim indefinite because it creates a situation where M^2's 'z' value in formula 1 can be less than its 'c' value in formula 2, contrary to the explicit teachings of the patents." *Id.* Defendant contends that this lack of precision can result in a case where c is ten times the value of z (0.02 v. 0.002), which is problematic as that the specification "requires" $z > c$. *Id.* (citing '446 Patent at 14:46–47). Defendant contends that if M^2 is in greater amounts in formula (2) than in formula (1), "their function of storing and releasing Li ions is easily impaired." *Id.* at 8–9 (quoting '446 Patent at 14:37–41). According to Defendant, this indicates that Plaintiff's plain-and-ordinary construction is incorrect. *Id.* at 9.

With respect to Plaintiff's argument that "the level of precision necessary to define the relevant ranges is greater with respect to elements that are present in smaller quantities," Defendant

contends that that argument is nonsensical because the lower bounds of M^1 and M^3 only use one and zero numbers, respectively, after the decimal point (*i.e.*, 0.8 and 0, respectively) while M^2 uses three numbers after the decimal point (*i.e.*, 0.002). *Id.* Defendant also contends that "nothing in the patents or [Plaintiff's expert's] testimony explains why there must be 3 decimal points level of precision on the low end of M^2, but not the top end of the M^2 value." *Id.*

In its sur-reply, Plaintiff contends that Defendant has not shown by clear and convincing evidence that the claims are indefinite. Sur-Reply at 8. Plaintiff contends that under Defendant's logic, "any claim having a limitation with a numerical value would be indefinite because the nature of numbers is that further precision is always possible through additional significant digits." *Id.* Plaintiff contends that logic is contrary to case law. *Id.* (quoting *BASF Corp. v. Johnson Matthey Inc.*, 875 F.3d 1360, 1365 (Fed. Cir. 2017) (holding that "reasonable certainty" "does not require absolute or mathematical precision") (internal quotation marks omitted)).

Plaintiff contends that Defendant's significant figures argument is a "red herring" as those numbers are simply the bounds of the claimed ranges, which was understood by Defendant's expert, and would be understood with "reasonable certainty" by a POSITA. *Id.* at 8–9.

With respect to Defendant's argument that a plain-and-ordinary meaning construction "reads out a preferred embodiment," Plaintiff contends that the possibility that a claim excludes a preferred embodiment does not render the claim to be indefinite. *Id.* at 9. Plaintiff further contends that there are "plenty of values for 'z' and 'c' that satisfy the claim limitations and are consistent with the preferred embodiment." *Id.*

M^2 and M^3 are described as being both optional and required: Defendant contends that because the low end value for M^2 can be 0 in formula (2) and the low end value for M^3 can be 0 in both formula (1) and (2) , they can be read out of the formulas altogether. Opening at 20. But Defendant also contends that the claims require both M^2 and M^3 being included. *Id*. Defendant further contends that nothing in the specification describes that M^2 and M^3 can be excluded. *Id.* at 21. Based on this, Defendant contends that because the claims simultaneously require the presence of M^2 and M^3 but also describe them being as optional, this is contradictory and thus indefinite. *Id.* at 20–21.

In its response, Plaintiff contends that the claims specifically allow the M^2 and M^3 to be optional, and that a POSITA would understand that. Response at 16. More specifically, Plaintiff contends that "because the subscripts in those particular instances include zero, a POSITA reading the claim would understand that M^2 in Formula (2) and M^3 in Formulas (1) and (2) are optional and do not need to be present[.]" *Id.* Plaintiff contends that "the claims allow for optionality, and thus are internally consistent and reconcilable to a POSITA." *Id.* at 17.

Plaintiff contends that the specification recites that 0 can be the lower bound for M^3, and that the specification expressly says that a compound "may contain no M^3." *Id.* at 17 (quoting '446 Patent at 14:2–6, '019 Patent at 14:9–13, '035 Patent at 9:20–24). Plaintiff also contends that the specification recites that 0 can be the lower bound for M^2. *Id*. (citing '446 Patent at 11:19-20, '019 Patent at 11:27-28, '035 Patent at 6:33-34).

In its reply, Defendant concedes that the specification allows M^3 to be optional. Reply at 9. But Defendant contends that the specification does not recite that M^2 is optional, rather, it only says that there is "less necessity" for the compound to contain M^2. *Id*. at 9–10.

Defendant also contends that the specification teaches away from M^2 being 0. *Id.* at 10. More specifically, Defendant contends that the specification describes that there needs to be a ratio of z to c, *e.g.*, 1.5:1. *Id*. But when c = 0, then the ratio is infinite which Defendant contends reads out an embodiment. *Id.* In particular, Defendant contends that the specification "consistently" requires M^2 where "two or more lithium-containing transition metal oxides having the different average particle sizes are used." *Id.* (citing '446 Patent at 11:40–42 ("when the amount of M^2 and the like added to the material (A) is relatively small, advantageous effects can be attained"); *see also* '446 Patent at 10:42–59, 14:17–21, and 14:54–15:6; '019 Patent at 10:37–38; 11:48-50; '035 pat. at 6:54-57; 10:16-17). Defendant contends that allowing M^2 to be optional excludes the embodiment in '446 Patent at 11:40–42. *Id.*

Finally, Defendant contends that Plaintiff's expert provided contradictory statements during IPR and now. *Id.* at 10–11.

In its sur-reply, with respect to Defendant's argument that a plain-and-ordinary construction could read out a preferred embodiment, Plaintiff contends that this argument is inapposite because "the plain and ordinary meaning of the terms do not entirely read out the preferred embodiments." Sur-Reply at 9.

With respect to Defendant's argument that the specification does not describe that M^2 is optional, but rather that there is "less necessity" for the compound to contain M^2, Plaintiff contends

that "less necessity" and the claim language are compatible and still support the conclusion that M^2 is optional. *Id.*

Plaintiff also contends that because the parties agree M^3 is not indefinite, M^2 likewise is not as they have both have 0 as the lower bound. *Id.* at 9–10.

With respect to Defendant's contention that Plaintiff's expert provided contradictory statements during IPR and now, Plaintiff contends that Defendant mischaracterizes and takes statements out of context. *Id.* at 10.

The Court's Analysis:

After reviewing the parties' arguments and considering the applicable law, the Court agrees with Plaintiff that because Defendant has not provided clear and convincing evidence that a POSITA would not understand the scope of this term with "reasonable certainty," the term is not indefinite and that the proper construction is plain-and-ordinary meaning for the reasons that follow.

Different numbers of significant figures at the range endpoints: ***First***, the Court agrees that with Plaintiff that Defendant's argument that a term is indefinite simply because it does not have as many significant digits as another number is completely contrary to the Federal Circuit's guidance. More specifically, the Circuit has held that "reasonable certainty" "does not require absolute or mathematical precision" yet Defendant's position is that the term is indefinite because there is not enough mathematical precision in the endpoints of the range. *BASF*, 875 F.3d at 1365.

Second, the Court agrees with Plaintiff that Defendant's significant figures argument is a "red herring," as those numbers are simply the bounds of the claimed ranges. More precisely, the number of significant figures is a red herring because changing the precision does not change the claim scope, *e.g.*, changing $0.002 \leq z \leq 0.05$ to $0.002 \leq z \leq 0.050$, despite increasing the number of digits after the decimal place. Rather, a POSITA understand that 0.05 and 0.050 are mathematically equal, regardless of the the number of digits after the decimal place.

Third, the Court agrees with Plaintiff that under Defendant's logic, any claim having a limitation with a numerical value would be indefinite because further precision is always possible through additional significant digits.

Fourth, the Court agrees with Plaintiff that even if a claim excludes a preferred embodiment, that does not render the claim to be indefinite.

M^2 and M^3 are described as being both optional and required: ***First***, the parties appear to agree that the specification describes M^3 as optional. Response at 17, Reply at 9. ***Second***, the Court agrees with Plaintiff that if M^3 is not indefinite, then M^2 should not be either.

Third, both parties agree there is no ambiguity in the claim language itself and both parties agree that the claims allow for M^2 not to be present in the claimed compound. Opening at 16, Response at 16. Therefore, the Court concludes that a POSITA would understand with "reasonable certainty" the meaning of this claim term.[2]

[2] While the specification does not expressly recite that M^2 is optional, the Court does not consider that to be § 112, ¶ 2 indefiniteness issue, but at most a § 112, ¶ 1 written description issue. The Court does not take a position whether

Fourth, the Court agrees with Plaintiff that even if a claim excludes a preferred embodiment, that does not render the claim to be indefinite.

Construction: Because the "heavy presumption" is that terms should be construed according to their plain-and-ordinary meaning and because Defendant does not allege lexicography or disclaimer, which are the only two exceptions to the general rule that a term should be construed as having its plain-and-ordinary meaning, the Court concludes that the term should be construed as having its plain-and-ordinary meaning. *Azure Networks*, 771 F.3d at 1347; *Thorner*, 669 F.3d at 1365.

Therefore, for the reasons described above, the Court finds that the term is not indefinite and should be construed according to its plain-and-ordinary meaning.

F. Term #6: "M^2 represents Mg, or Mg and at least one metal element selected from the group consisting of Ti, Zr, Ge, Nb, Al and Sn, … [and] a content of Mg in the formula (1) is from 0.15% by mole to less than 2% by mole based on an amount of the metal M^1"

Term	Plaintiff's Proposed Construction	Defendant's Proposed Construction
"M^2 represents Mg, or Mg and at least one metal element selected from the group consisting of Ti, Zr, Ge, Nb, Al and Sn, … [and] a content of Mg in the formula (1) is from 0.15% by mole to less	No construction necessary; Plain and ordinary meaning	Indefinite

there is a written description issue. Rather, the Court only raises the written description requirement to categorize Defendant's argument as appearing to be directed towards written description than indefiniteness.

than 2% by mole based on an amount of the metal M^1" U.S. Patent No. 9,350,019, Cl. 1		

The Parties' Positions:

Defendant contends that this term is indefinite because there is a broad range ($0.002 \leq z \leq 0.05$) and a narrow range ("from 0.15% by mole to less than 2%") in the claim and that is indefinite per MPEP § 2173.05(c) ("Numerical Ranges and Amounts Limitations"). Opening at 22. More specifically, Defendant contends that "M^2 can be magnesium alone or in combination with 'at least one metal element selected from the group consisting of Ti, Zr, Ge, Nb, Al and Sn." *Id.* (quoting '019 Patent, Claim 1, Limitation [c]). Defendant contends that, later in the claim, "the amount of magnesium is capped by a ratio of '0.15% by mole to less than 2% by mole based on an amount of the metal M^1.'" *Id.* (quoting'019 Patent, Claim 1, Limitation [d]). Defendant contends that this claim language renders the claim indefinite from a POSITA's perspective. *Id.*

Defendant contends that Examiner flagged this issue during prosecution and Applicant canceled the claims, but sought the same exact claim limitation later which was ultimately granted. *Id.* at 22–23.

In its response, Plaintiff contends that the term is not indefinite "because its scope is clear, especially in light of the intrinsic evidence" and that its expert agrees. Response at 18.

Plaintiff contends that these two ranges, while related, "are wholly separate and can exist without conflict." Response at 19 (citing ECF No. 52-1 (Lucht expert declaration) at ¶ 64). In particular, Plaintiff contends that:

> The requirement that the subscript for M^2 is $0.002 \leq z \leq 0.05$ describes the amount of M^2 with respect to **the entire lithium-containing transition metal oxide formula**. The requirement that 'a content of Mg in the formula (1) is from 0.15% by mole to less than 2% by mole based on an amount of the metal M^1' describes the amount of Mg in the entire lithium-containing transition metal oxide with respect to the amount of metal in $\mathbf{M^1}$.

Id. (emphasis in Plaintiff's brief, internal citations removed). In other words, Plaintiff contends that "the two claimed ranges describe different limitations of the claim, based on different features. Accordingly, the [] limitation, as written, does not claim a range within a range." *Id.* (internal citations omitted).

Plaintiff contends that Defendant's MPEP argument also fails because it pertains to when the boundaries of the claim are not discernable. *Id*. In particular, Plaintiff points out the examples given in the MPEP, *e.g.*, "(A) a temperature of between 45 and 78 degrees Celsius, preferably between 50 and 60 degrees Celsius" does not make clear what the claimed range is. *Id.* at 19–20. Plaintiff contends that that example is indefinite because it is unclear which range (45 to 78°C or 50 to 60°C) is being claimed, but here "the limitation at issue clearly indicates that Mg must be present, and in what quantities."

In its reply, Defendant contends that Plaintiff's argument is a "strained" reading of the claim and not how a POSITA would understand it. Reply at 11. Defendant then otherwise repeats its indefiniteness and prosecution arguments that it provided in its opening brief. *Id.* at 12.

In its sur-reply, Plaintiff contends that Defendant repeats its prior arguments and that the "great flaw" in Defendant's argument is that it relies on the prosecution history for the '446 Patent when this term does not appear in the '446 Patent, but only in the '019 Patent. Sur-Reply at 11. Plaintiff contends that this term does not require a narrower range be within a broader range and that is why Examiner allowed the claims. *Id.*

The Court's Analysis:

After reviewing the parties' arguments and considering the applicable law, the Court agrees with Plaintiff that because Defendant has not provided clear and convincing evidence that a POSITA would not understand the scope of this term with "reasonable certainty," the term is not indefinite and that the proper construction is plain-and-ordinary meaning.

The Court agrees with Plaintiff that this term does not require a narrower range within a broader range. More specifically, Claim 1 of the '019 Patent requires that M^2 represents Mg, or Mg and at least one metal element selected from the group consisting of Ti, Zr, Ge, Nb, Al and Sn. Claim 1 also limits M^2 by describing that its molar ratio is between $0.002 \leqq z \leqq 0.05$ and that the content of Mg is 0.15% by mole to 2% by mole based on an amount of metal element M^1. The two numerical relationships are independent of each other, insofar as they are based on different things. More specifically, the subscript for M^2 describes the amount of M^2 with respect to the entire lithium-containing transition metal oxide formula. By contrast, the "content of Mg in the formula (1) is from 0.15% by mole to less than 2% by mole based on an amount of the metal M^1" is with respect to the amount of metal in M^1. Because these two numerical relationships are based

on different denominators, the Court concludes there is no conflict and thus the term is not indefinite.

Because the "heavy presumption" is that terms should be construed according to their plain-and-ordinary meaning and because Defendant does not allege lexicography or disclaimer, which are the only two exceptions to the general rule that a term should be construed as having its plain-and-ordinary meaning, the Court concludes that the term should be construed as having its plain-and-ordinary meaning. *Azure Networks*, 771 F.3d at 1347; *Thorner*, 669 F.3d at 1365.

Therefore, for the reasons described above, the Court finds that the term is not indefinite and should be construed according to its plain-and-ordinary meaning.

G. Term #7: "at least 3.5 g/cm3"

Term	Plaintiff's Proposed Construction	Defendant's Proposed Construction
"at least 3.5 g/cm^3" U.S. Patent No. 8,691,446 Patent, Cls. 1, 3; U.S. Patent No. 9,350,019, Cls. 1; U.S. Patent No. 9,077,035, Cl. 7	No construction necessary; Plain and ordinary meaning	Indefinite

The Parties' Positions:

Defendant contends that this is indefinite because there is no upper-bound specified in the claims for this term. Opening at 24. Defendant contends that the specification describes that the preferred upper limit is 4.6 g /cm^3. *Id.* (citing '446 Patent at 7:57–67). Defendant further contends that the specification describes that battery reliability decreases as density increases. *Id.* Given

that, Defendant contends that without specifying an upper-bound in the claims, the claims lack enablement. *Id.*

In its response, Plaintiff contends that enablement is a question of validity, which is not appropriate to resolve during claim construction. Response at 20. Plaintiff also contends that the term is understandable on its own and that Defendant's expert understands it. *Id.* Plaintiff contends that Defendant confuses breadth with indefiniteness. *Id.* at 21. Plaintiff also contend that the Federal Circuit has held that "[o]pen-ended claims are not inherently improper; as for all claims their appropriateness depends on the particular facts of the invention, the disclosure, and the prior art." *See Andersen Corp. v. Fiber Composites, LLC*, 474 F.3d 1361, 1376-77 (Fed. Cir. 2007).

In its reply, Defendant again contends that because the claim does not specify an upper limit, a POSITA would not understand the scope of the claim term with "reasonable certainty" given that a POSITA would understand—and the specification discloses—that battery reliability decreases as density increases. Reply at 12–13.

In its sur-reply, Plaintiff again contends that failure to provide an upper limit has "no support in law or fact." Sur-Reply at 11. Plaintiff contends that "both experts agree that the term 'at least 3.5 g/cm^3' is clear." *Id.* at 12.

The Court's Analysis:

After reviewing the parties' arguments and considering the applicable law, the Court agrees with Plaintiff that because Defendant has not provided clear and convincing evidence that a

POSITA would not understand the scope of this term with "reasonable certainty," the term is not indefinite and that the proper construction is plain-and-ordinary meaning for the reasons that follow.

First, given there is no dispute that a POSITA would understand that the claim term "at least 3.5 g/cm^3" simply means "greater than or equal to 3.5 g/cm^3. ***Second***, the Court concludes that a lack of an upper bound does not render the term to be indefinite and Defendant has not cited any authority for that proposition. At best, Defendant attempts to conflate enablement with indefiniteness, in order to bolster its indefiniteness case.[3] ***Third***, the Court agrees with Plaintiff that Defendant confuses breadth with indefiniteness. Based on these reasons, the Court concludes that Defendant has failed to provide clear-and-convincing that a POSITA would understand with "reasonable certainty" the scope of this claim term.

Because the "heavy presumption" is that terms should be construed according to their plain-and-ordinary meaning and because Defendant does not allege lexicography or disclaimer, which are the only two exceptions to the general rule that a term should be construed as having its plain-and-ordinary meaning, the Court concludes that the term should be construed as having its plain-and-ordinary meaning. *Azure Networks*, 771 F.3d at 1347; *Thorner*, 669 F.3d at 1365.

Therefore, for the reasons described above, the Court finds that the term is not indefinite and should be construed according to its plain-and-ordinary meaning.

[3] As was the case for note 2, the Court does not take a position whether there is an enablement issue. Rather, the Court only raises the enablement requirement to categorize Defendant's argument as appearing to be directed towards enablement than indefiniteness.

H. Term #8: "M^1 represents at least one transition metal element selected from Co, Ni and Mn, . . . wherein the content of Co in the transition metal M^1 of the formulae (1) and (2) is from 30% by mole to 100% by mole"

Term	Plaintiff's Proposed Construction	Defendant's Proposed Construction
"M^1 represents at least one transition metal element selected from Co, Ni and Mn, . . . wherein the content of Co in the transition metal M^1 of the formulae (1) and (2) is from 30% by mole to 100% by mole" U.S. Patent No. 9,077,035, Cl. 1	No construction necessary; Plain and ordinary meaning	Indefinite

The Parties' Positions:

Defendant contends that this term is indefinite because it is unclear whether Co has to be selected or is merely optional. Opening at 24–25. More specifically, Defendant contends that the first part of the claim requires that at least one of Co, Ni and Mn be selected as M^1. Opening at 25. As such, M^1 may be Co (either alone or together with Ni and/or Mn) or it may not include Co. *Id.* Defendant contends that the "wherein the content of Co in the transition metal M^1 of the formulae (1) and (2) is from 30% by mole to 100% by mole" requires that Co be M^1 and be 30% to 100% of the weight. *Id.* Based on the understanding of these two requirements, Defendant contends that the first part of the claim describes that Co is optional while the second half of the claim recites that Co is required. *Id.* Based on these conflicting requirements with respect to the optionality of Co, Defendant contends that the claim is indefinite. *Id.*

In its response, Plaintiff contends that the first part of the claim "constitutes a *Markush* group wherein M^1 represents Co, or Co and at least one transition metal element selected from the group consisting of Ni and Mn." Response at 22. Plaintiff contends that the second part of the claim "simply confirms that the presence of Co is required." *Id.*

Plaintiff contends that the prosecution history supports its position as Co was in the originally filed claims. *Id.* Plaintiff then contends that Applicant amended the claim to create *Markush* group by adding Ni and Mn as additional elements and to require that Co is 30% to 100%. Response at 22–23 (quoting Response, Ex. 18 at 2–3). Plaintiff further contends that Applicant distinguished the pending claim from prior art by arguing that "Oda et al. JP '507 does not describe or teach such a content of Co, since Oda et al. JP '507 predominantly uses Ni as a transition metal." *Id.* at 23 (quoting Response, Ex. 18 at 10).

Plaintiff contends that "a POSITA would understand, that the content of Co in the transition metal M^1 of the formulae (1) and (2) is from 30% by mole to 100% by mole, and that M^1 may also include Ni and/or Mn." *Id.*

In its reply, Defendant contends that Plaintiff's assertion that the claim "constitutes a *Markush* group wherein M^1 represents [1] Co, or [2] Co and at least one transition metal element selected from the group consisting of Ni and Mn" is incorrect. Reply at 13 (quoting Response at 22 (annotations added)). More specifically, Defendant contends that the claim language does not recite two options as annotated, but rather only describes a single option, "M^1 represents at least one transition metal element selected from Co, Ni and Mn." *Id.* Defendant contends that had Applicant wanted to draft a claim in the manner Plaintiff argued, Applicant knew how to do so as

Claim 1 of the '019 Patent was drafted to allow for two options. '019 Patent, Claim 1, Limitation [c] ("…M^2 represents Mg, or Mg and at least one metal element selected from the group consisting of Ti, Zr, Ge, Nb, Al and Sn…"). Defendant contends that the contradictory nature of the claim language renders this claim term to be indefinite. *Id.*

In its sur-reply, Plaintiff contends that Defendant's indefiniteness argument is based on a "willful refusal to read the two parts of the term together and a refusal to consider how a POSITA would understand the effect of the latter portion of the term defining the Co content on the former portion of the term broadly defining the possible elements." Sur-Reply at 12. Plaintiff contends that "standard practice in drafting patent claims for some aspect to be defined more broadly and then further narrowed through specific limitations," in this case, Applicant first broadly drafted a *Markush* group to include Co and then narrowed it to require a specific amount of Co. *Id.* Plaintiff contends that a POSITA would understand these two limitations with reasonable certainty and that they are not irreconcilable. *Id.* at 12–13.

The Court's Analysis:

After reviewing the parties' arguments and considering the applicable law, the Court agrees with Defendant that the term is indefinite for the reasons that follow. ***First***, the Court concludes that the plain language of the claim recites a contradiction. The first part of the claim recites a *Markush* group where Co is not necessarily required to be in the claimed compound while the second part of the claim recites that Co is necessarily required. For an element to simultaneously be optional and required is a contradiction on its face. As such, the Court concludes that there is

clear-and-convincing evidence that a POSITA would not understand with "reasonable certainty" what this claim requires.

Second, the Court disagrees with Plaintiff's interpretation of the claim. Plaintiff argues that the claim "constitutes a *Markush* group wherein M^1 represents [1] Co, or [2] Co and at least one transition metal element selected from the group consisting of Ni and Mn." Reply at 13 (annotations added). But rather than describe two options where Co is part of both options, the claim ("M^1 represents at least one transition metal element selected from Co, Ni and Mn") recites a *Markush* group where there are up to seven options (Co, Ni, Mn, Ni & Mn, Co & Mn, Co & Ni, Co & Ni & Mn) where Co is only present in four of the seven options. Therefore, Plaintiff's assertion that Co is necessarily present in the claimed compound is incorrect, which means that aforementioned contradiction exists.

Third, the Court disagrees with Plaintiff that Claim 1 simply follows standard drafting practice by reciting a broad limitation and then reciting another limitation that narrows the broad limitation. As described above, the first part of the claim recites a broad claim with seven options, but then the second part of the claim recites a narrowing limitation that does not apply to all options. In other words, the second part of the claim does not narrow the first part of the claim as it does not apply to some *Markush* group combinations. Therefore, the Court concludes that Plaintiff's interpretation that Claim 1 recites a broad limitation that is narrowed by another limitation is incorrect.

Fourth, the Court agrees with Defendant that had Applicant wanted to draft a claim in the manner Plaintiff argued, Applicant knew how to do so. More specifically, Claim 1 of the '019

Patent allows for two options (both of which required one particular element, Mg). '019 Patent, Claim 1, Limitation [c] ("…M^2 represents Mg, or Mg and at least one metal element selected from the group consisting of Ti, Zr, Ge, Nb, Al and Sn…"). But, despite knowing how to draft a claim that allow for two options, both of which could have included Co, Plaintiff chose not to do so for this claim term, thus supporting the Court's conclusion of indefiniteness.

Therefore, for the reasons described above, the Court finds that the term is indefinite.

I. Term #9: "the shutdown layer has a thickness A (μm) of 5 to 30, the heat-resistant layer has a thickness B (μm) of 1 to 10, a sum of A and B is 6 to 23, and a ratio A/B is 1/2 to 4"

Term	Plaintiff's Proposed Construction	Defendant's Proposed Construction
#9: "the shutdown layer has a thickness A (μm) of 5 to 30, the heat-resistant layer has a thickness B (μm) of 1 to 10, a sum of A and B is 6 to 23, and a ratio A/B is 1/2 to 4" U.S. Patent No. 9,166,251, Cl. 1	No construction necessary; Plain and ordinary meaning	Indefinite

The Parties' Positions:

The formulas that are relevant to the indefiniteness dispute are:

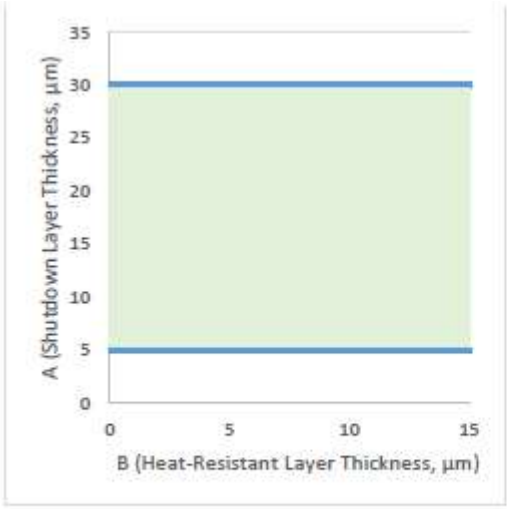
- $5 \leq A \leq 30$ (1)
- $1 \leq B \leq 10$ (2)
- $6 \leq (A + B) \leq 23$ (3)
- $1/2 \leq A/B \leq 4$ (4)

where A and B are thicknesses of the shutdown layer and heat-resistant layer, respectively.

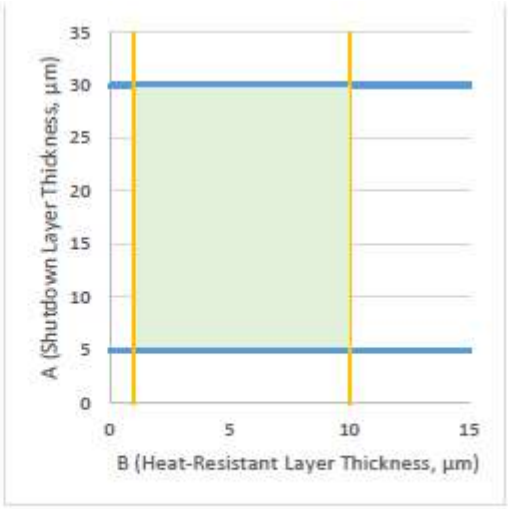
Defendant contends that this claim term is indefinite because A and B cannot, *e.g.*, both be at their maximum (*i.e.*, A= 30 and B= 10), without violating the $6 \leq A+B \leq 23$ requirement. Opening at 26. Defendant contends that this is "internally inconsistent and logically impossible." *Id.* Defendant contends that the $1/2 \leq A/B \leq 4$ limitation "amplifies" the problem, but does not appear to explain why. *Id.* at 27. Defendant contends that "[a]s a question of algebra, these four equations are cannot be reconciled," and thus the claim term is indefinite. *Id.* (citing *Fargo Elecs. Inc. v. Iris, Ltd.*, 287 F. App'x 96, 100 (Fed. Cir. 2008)).

Defendant contends that Applicant added ranges for A and B in order to added to get around prior art, which disclosed ranges of 5–35 μm for A and 1–16 μm for B. *Id.* at 28.

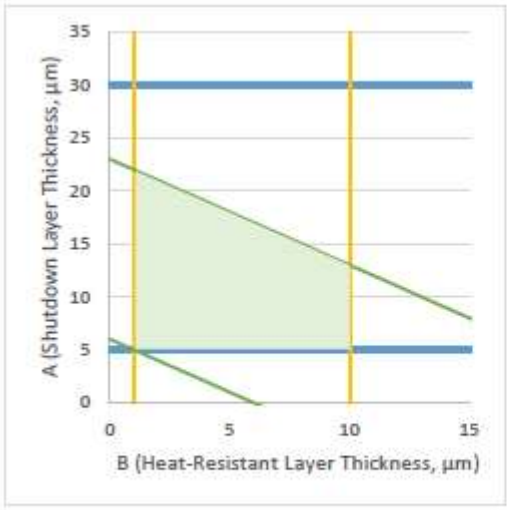
Plaintiff contends that there is no inconsistency and that it is a simple matter for determine what values of A and B satisfy the equations and which do not. Response at 24–25. Plaintiff contends that the claim does not require that each equation be met in isolation, but rather values of A and B need to meet all four equations simultaneously. *Id.* at 25. Plaintiff argues that each limitation successively narrows the scope of the claim to what infringes and what does not. Response at 25–26. Plaintiff provides the following illustration to show how each equation further limits the claim scope of what are acceptable values for the shutdown layer and heat-resistant layer thicknesses. Response at 26.



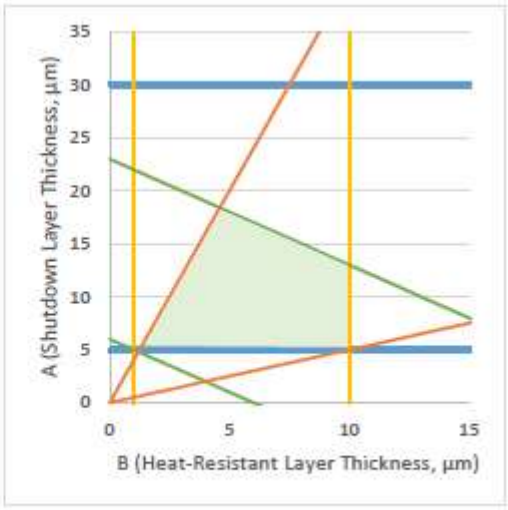
Equation (1)



Equations (1-2)



Equations (1-3)



Equations (1-4)

Based on this, Plaintiff contends that rather than being indefinite, "a POSITA would readily understand that the four Equations define a discrete set of values for A and B, and thus describe with mathematical precision the allowed values, far exceeding the reasonable certainty required by *Nautilus*." *Id.* at 26–27.

In its reply, Defendant contends that Plaintiff is asking the Court to rewrite the claim in order to preserve validity. Reply at 14. Defendant also contends that Plaintiff has not explained why the claim limitation provides that the shutdown layer (A) can have a thickness up to 30 μm. *Id.*

In its sur-reply, Plaintiff contends that a POSITA would be able to determine which values of A and B infringe and which do not. Sur-Reply at 13. Plaintiff contends that Defendant's expert admits that given values for A and B, he would be able to determine whether that pair of values fell within the claim scope. *Id.* (citing Sur-Reply, Ex. 19 at 116:13–118:14). Plaintiff also contends that the figures it provided above "are instructive charts that describe a mathematically bounded set of values for A and B that meet all four limitations." *Id.*

With respect to why shutdown layer (A) can have a thickness up to 30 μm, Plaintiff contends that is the wrong question to ask and all the matter is whether a POSITA could determine the set of values of A and B that fall within the claim scope with reasonable certainty. *Id.* at 14.

The Court's Analysis:

After reviewing the parties' arguments and considering the applicable law, the Court agrees with Plaintiff that because Defendant has not provided clear and convincing evidence that a POSITA would not understand the scope of this term with "reasonable certainty," the term is not indefinite and that the proper construction is plain-and-ordinary meaning for the reasons that follow. ***First***, the Court concludes that there is no ambiguity in the above formulas that would prevent a POSITA from determining whether a specific pair of values for the thicknesses of the

shutdown layer and heat-resistant layer (*i.e.*, A and B, respectively) meet all four equations. Plaintiff's charts above depict the exact set of values for A and B that meet all four equations. Furthermore, Defendant's expert concedes that he would able to determine whether a set of values for A and B met all four equations.

Second, Defendant's core argument appears to be that when a specific value of A and/or B meets one equation, but is mathematically impossible to also meet other equations, the claim is indefinite. Defendant contends that A = 30 μm illustrates its point as while that value of A meets equation (1) ($5 \leq A \leq 30$), it cannot possibly meet equation (3) ($6 \leq (A + B) \leq 23$). But the Court is not persuaded by Defendant's argument because Defendant conflates what are non-infringing values with indefiniteness.

All that is required for a claim to be not indefinite is for a POSITA to understand with "reasonable certainty" what scope of the invention is. *Nautilus*, 572 U.S. at 910. As described above, a POSITA would understand the scope of this term with reasonable certainty. But the fact that some values of A and B meet some equations (*i.e.*, limitations), but not others, is a classic case of non-infringement. If anything, because the claim is written in terms of mathematical relationships, the scope of the claim is crystal clear—which means it is not indefinite—such that it is very easy to determine what values of A and B fall outside of the scope of the claim—which means that they do not infringe.

Third, with respect to Defendant's argument that Plaintiff is asking the Court to redraft the claims, the Court rejects this argument because Defendant has not explained how plain-and-ordinary meaning somehow redrafts the claim. Furthermore, as described above, the scope of the

claim is so clear that even Defendant's expert can determine what values of A and B will infringe and which do not and that Plaintiff can provide a colorful graphic to pictorially depict the claim scope. Therefore, the Court does not need to redraft the claim to preserve its validity (nor does it have the power to do so).

Because the "heavy presumption" is that terms should be construed according to their plain-and-ordinary meaning and because Defendant does not allege lexicography or disclaimer, which are the only two exceptions to the general rule that a term should be construed as having its plain-and-ordinary meaning, the Court concludes that the term should be construed as having its plain-and-ordinary meaning. *Azure Networks*, 771 F.3d at 1347; *Thorner*, 669 F.3d at 1365.

Therefore, for the reasons described above, the Court finds that the term is not indefinite and should be construed according to its plain-and-ordinary meaning.

J. Term #10: "a particle size of 0.2 µm or less . . . a particle size of 2 µm or more"

Term	Plaintiff's Proposed Construction	Defendant's Proposed Construction
#10: "a particle size of 0.2 µm or less . . . a particle size of 2 µm or more" U.S. Patent No. 9,166,251, Cl. 1	No construction necessary; Plain and ordinary meaning	Indefinite

The Parties' Positions:

Defendant first contends that this term is indefinite because the patentee did not specify the x, y, z dimensions of the particle size. Opening at 28. Defendant cites to extrinsic evidence to

illustrate that the particle size could be the diameter at the largest/smallest point, average length/width/height, etc. *Id.* at 29. Defendant contends that because "'particle size' could mean diameter at largest point, diameter at smallest point, or average length/width/height, the claim does not set forth the metes and bounds of the invention and hence is indefinite." *Id.*

In its response, Plaintiff contends that Defendant's expert does not address Defendant's claim that a POSITA would be unable to determine what "particle size" means in the context of the '251 Patent. Response at 28. Plaintiff contends that this omission alone is fatal to Defendant's indefiniteness argument. *Id.*

Plaintiff contends that the specification addresses the irregularity of particles and how to measure them (as the diameter of a hypothetical sphere using a laser diffraction particle analyzer). *Id.* at 28–29. Plaintiff contends that "[l]aser diffraction particle sizing is a well-known technique that results in particle size distributions reported as volume equivalent sphere diameters." *Id.* at 29. Plaintiff also points to one of Defendant's exhibits that describes using laser diffraction to measure volume equivalent sphere diameter. *Id.* at 29 (quoting Opening, Ex. 16 at 14–15).

In its reply, Defendant contends that specification does not describe how to measure the "proportion" of the small/large particles. Reply at 15. Defendant contends that while the specification describes using the "Horiba" device to measure the "average particle size of all particles in a layer by creating a volumetric equivalence of all particles and dividing by the total number of particles, there is nothing in the patent that says this device should be used to measure the size of a 'proportion' of particles." *Id.*

In its sur-reply, Plaintiff first contends that the Defendant's new argument is waived because it was not raised until Reply. Sur-Reply at 14 (quoting *United States v. Jackson*, 426 F.3d 301, 304 n.2 (5th Cir. 2005) ("Arguments raised for the first time in a reply brief . . . are waived.")).

Plaintiff next contends that Defendant "is wrong on the operation of the Horiba device; it does not provide a single average particle size across the entire layer but rather provides a distribution of particle sizes." Sur-Reply at 15 (citing Sur-Reply, Ex. 20 at 68–69; Opening, Ex. 15 at 4).

Plaintiff finally contends that "[t]he specific capabilities of the Horiba device aside, [Defendant's] argument has nothing to do with whether the claim term itself is indefinite." Sur-Reply at 15. Plaintiff contends that the issue is that "[t]he claim requires that the proportion of the particles that are 0.2 μm or less, for example, make up 10 vol % or less of the layer" and "[t]here is no dispute of how to interpret the meaning of having a proportion of particles in the heat-resistant layer having a particular particle size." *Id.*

The Court's Analysis:

After reviewing the parties' arguments and considering the applicable law, the Court agrees with Plaintiff that because Defendant has not provided clear and convincing evidence that a POSITA would not understand the scope of this term with "reasonable certainty," the term is not indefinite and that the proper construction is plain-and-ordinary meaning for the reasons that follow. ***First***, none of Defendant's arguments have anything to do with indefiniteness. Rather,

Defendant's arguments appear to be directed towards enablement.[4] ***Second***, Defendant does not appear to provide an expert declaration that explains why a POSITA would not understand, with "reasonable certainty," what the scope of the claimed invention is. Based on these two reasons, the Court finds that Defendant has not provided clear-and-convincing evidence that the claim term is indefinite.

Third, Defendant's basis for its indefiniteness allegation shifted from its Opening brief to its Reply brief, which indicates, at minimum, that those arguments are not strong. More specifically, Defendant abandoned its Opening indefiniteness argument in its Reply brief which indicates that even Defendant realized there was not much merit to that argument. Defendant first raised its Reply indefiniteness argument in its Reply brief, which either indicates that Defendant did not think that it was as strong as its Opening indefiniteness argument or that Defendant only thought of it for the Reply brief, neither of which indicates that Defendant's Reply indefiniteness argument is strong.

Because the "heavy presumption" is that terms should be construed according to their plain-and-ordinary meaning and because Defendant does not allege lexicography or disclaimer, which are the only two exceptions to the general rule that a term should be construed as having its plain-and-ordinary meaning, the Court concludes that the term should be construed as having its plain-and-ordinary meaning. *Azure Networks*, 771 F.3d at 1347; *Thorner*, 669 F.3d at 1365.

[4] As was the case for note 2, the Court does not take a position whether there is an enablement issue. Rather, the Court only raises the enablement requirement to categorize Defendant's argument as appearing to be directed towards enablement than indefiniteness.

Therefore, for the reasons described above, the Court finds that the term is not indefinite and should be construed according to its plain-and-ordinary meaning.

IV. CONCLUSION

In conclusion, for the reasons described herein, the Court adopts the below constructions as its final constructions.

SIGNED this 10th day of November 2022.

ALAN D ALBRIGHT
UNITED STATES DISTRICT JUDGE

Term	Plaintiff's Proposed Construction	Defendant's Proposed Construction	Court's Final Construction
#1: "positive electrode mixture layer" U.S. Patent No. 8,691,446 Patent, Cls. 1, 3; U.S. Patent No. 9,350,019, Cl. 1; U.S. Patent No. 9,077,035, Cl. 1	No construction necessary; Plain and ordinary meaning	"A mixture of at least two lithium-containing transition metal oxides formed on one or both sides of an electrode current collector"	Plain-and-ordinary meaning
#2: "the positive electrode contains, as [an] active material[s], at least two lithium-containing transition metal oxides having different average particle sizes" U.S. Patent No. 8,691,446 Patent, Cls. 1, 3; U.S. Patent No. 9,350,019, Cl. 1; U.S. Patent No. 9,077,035, Cl. 1	No construction necessary; Plain and ordinary meaning	"The active material of the positive electrode is a mixture formed from two or more lithium-containing transition metal oxides, at least two of the transition metal oxides having different average particle sizes"	Plain-and-ordinary meaning

Term	Plaintiff's Proposed Construction	Defendant's Proposed Construction	Court's Final Construction
#3: "different compositions of elements" / "is different from" U.S. Patent No. 8,691,446 Patent, Cls. 1, 2, 3 U.S. Patent No. 9,350,019, Cls. 3, 4	No construction necessary; Plain and ordinary meaning	"The first and second lithium-containing transition metal oxides do not share all of the same chemical elements"	Plain-and-ordinary meaning
#4: "a compound having at least two nitrile groups" U.S. Patent No. 8,691,446 Patent, Cls. 1, 3; U.S. Patent No. 9,350,019, Cls. 1	No construction necessary; Plain and ordinary meaning	"A compound with at least two nitrile groups that are 1% or less by total weight of the electrolyte"	Plain-and-ordinary meaning
#5: "$0.97 \leq x < 1.02$, $0.8 \leq y < 1.02$, $0.002 \leq z \leq 0.05$, and $0 \leq v \leq 0.05$" / "$0.97 \leq a < 1.02$, $0.8 \leq b < 1.02$, $0 \leq c \leq 0.02$, and $0 \leq d \leq 0.02$" U.S. Patent No. 8,691,446 Patent, Cls. 1, 2, 3, 4; U.S. Patent No. 9,350,019, Cls. 1, 2; U.S. Patent No. 9,077,035, Cl. 1	No construction necessary; Plain and ordinary meaning	Indefinite	Not indefinite. Plain-and-ordinary meaning.

Term	Plaintiff's Proposed Construction	Defendant's Proposed Construction	Court's Final Construction
#6: "M^2 represents Mg, or Mg and at least one metal element selected from the group consisting of Ti, Zr, Ge, Nb, Al and Sn, … [and] a content of Mg in the formula (1) is from 0.15% by mole to less than 2% by mole based on an amount of the metal M^1" U.S. Patent No. 9,350,019, Cl. 1	No construction necessary; Plain and ordinary meaning	Indefinite	Not indefinite. Plain-and-ordinary meaning.
#7: "at least 3.5 g/cm^3" U.S. Patent No. 8,691,446 Patent, Cls. 1, 3; U.S. Patent No. 9,350,019, Cls. 1; U.S. Patent No. 9,077,035, Cl. 7	No construction necessary; Plain and ordinary meaning	Indefinite	Not indefinite. Plain-and-ordinary meaning.

Term	Plaintiff's Proposed Construction	Defendant's Proposed Construction	Court's Final Construction
#8: "M^1 represents at least one transition metal element selected from Co, Ni and Mn, . . . wherein the content of Co in the transition metal M^1 of the formulae (1) and (2) is from 30% by mole to 100% by mole" U.S. Patent No. 9,077,035, Cl. 1	No construction necessary; Plain and ordinary meaning	Indefinite	Indefinite
#9: "the shutdown layer has a thickness A (μm) of 5 to 30, the heat-resistant layer has a thickness B (μm) of 1 to 10, a sum of A and B is 6 to 23, and a ratio A/B is ½ to 4" U.S. Patent No. 9,166,251, Cl. 1	No construction necessary; Plain and ordinary meaning	Indefinite	Not indefinite. Plain-and-ordinary meaning.

Term	Plaintiff's Proposed Construction	Defendant's Proposed Construction	Court's Final Construction
#10: "a particle size of 0.2 µm or less . . . a particle size of 2 µm or more" U.S. Patent No. 9,166,251, Cl. 1	No construction necessary; Plain and ordinary meaning	Indefinite	Not indefinite. Plain-and-ordinary meaning.